CLAIMS

What is claimed is:

1. A manufacturing process for producing a cross-connected matrix of optic fibers comprising:

providing a plurality optic fiber paths on a fiber positioning fixture;

sequentially routing at least one optic fiber on the optic fiber positioning fixture by;

arranging the at least one optic fiber n fiber runs having into at least two input groups based on a predetermined map, with at least m of the fiber runs having a first end being in one of the input group, where m is an integer defined by $2 \leq m \leq (n - 1)$;

arranging the at least one optic fiber into at least two output groups based on the predetermined map, with the output end of at least one of the m fibers being in a different output group than the output group of another of the m fiber; and

ribbonizing the first ends of the fiber runs in the input groups and ribbonizing the second ends of the fiber runs in the output groups.

2. The process of claim 1, further comprising arranging the first ends of the optic fiber runs in at least one of the input groups into a 1xr array, where r is an integer ≥ 2.

3. The process of claim 1, further comprising arranging the second ends of the optic fiber runs in at least one of the output groups into a 1xs array, where s is an integer ≥ 2.

4. The process of claim 1, further comprising vertically aligning the first and second ends of the optic fiber runs in the input groups and the output groups prior to ribbonizing.

5. The process of claim 1, further comprising holding the input groups and the output groups in position with fiber guides on the optical fiber positioning fixture prior to and during the ribbonizing.

6. The process of claim 1, further comprising arranging the optical fiber runs using a computer controlled, and programming the predetermined map into the computer optic fiber dispensing head connected to a moveable positioning system.

7. The process of claim 1, further comprising arranging the first and second ends of the fiber runs such that a number of input and output groups created is equal to a number of fiber runs in each of the input and output groups, the fibers from each input group being routed to different output groups.

8. The process of claim 1, wherein the at least one optic fiber is routed by placing the optic fiber in a first path to form a first run, wrapping the optic fiber around a turning point.

9. An apparatus for producing a cross-connected matrix of optical fibers comprising:

an optic fiber positioning fixture;

fiber guides located on the optic fiber positioning fixture adapted to hold optic fiber runs;

an optic fiber dispensing head connected to a movable positioning system located in proximity to the optic fiber positioning fixture; and

a programable controller connected to the movable positioning system to control movement of the optic fiber dispensing head to place the fiber runs according to a predetermined map.

10. The apparatus of claim 9, further comprising posts 16 in a central crossover area adapted to form a central fiber crossover area and allow radial turning of optic fibers into and out of the central crossover area on the optic fiber positioning fixture.

11. The apparatus of claim 9, further comprising:

a coating application system having a coating device located adjacent to the positioning fixture.

12. The apparatus of claim 9, wherein the fiber optic positioning fixture is movable.

13. The apparatus of claim 12, further comprising:

a conveyer connected to the programmable controller, the conveyer adapted to move the fiber optic positioning fixture; and

a coating application device located on a second movable positioning system adjacent to the fiber dispensing head movable positioning system.

14. The apparatus of claim 13, further comprising a coating curing system located on a third movable positioning system adjacent to the second movable positioning system.

first and second elevators adapted to accept the fiber optic positioning fixture; and

a return conveyer adapted to receive the fiber optic positioning fixture and returning it to starting position.

15. The apparatus of claim 9, further comprising:

a plurality of guides adapted to receive optic fibers, the guide slots being arranged into input and output optic fiber group locations.

16. The apparatus of claim 9, further comprising:

a plurality of guides adapted to receive optic fiber runs, the guides being oriented generally vertically.

17. The apparatus of claim 9, further comprising:

a plurality of guides adapted to receive optic fiber runs, the guides being oriented generally horizontally and being vertically spaced apart from one another.

18. The apparatus of claim 9, further comprising a second fiber optic positioning fixture spaced apart from the fiber optic positioning fixture.

19. The apparatus of claim 9, further comprising first and second posts located an opposite sides of the optic fiber positioning fixture.

20. A manufacturing process for producing a cross-connected matrix of optical fibers comprising:

providing n optic fiber paths on a fiber positioning fixture where n is an integer greater than 2;

sequentially routing at least one optic fiber on the optical fiber positioning fixture through the n fiber paths to form a plurality of fiber runs;

securing the routed at least one optic fiber;

moving the optic fiber positioning fixture to a ribbonizing system;

ribbonizing the sequentially routed at least one optic fiber;

moving the optic fiber positioning fixture to a curing system;

curing the ribbonized sequentially routed at least one optic fiber; and

cutting the cured ribbonized sequentially routed at least one optic fiber to form input and output ends.